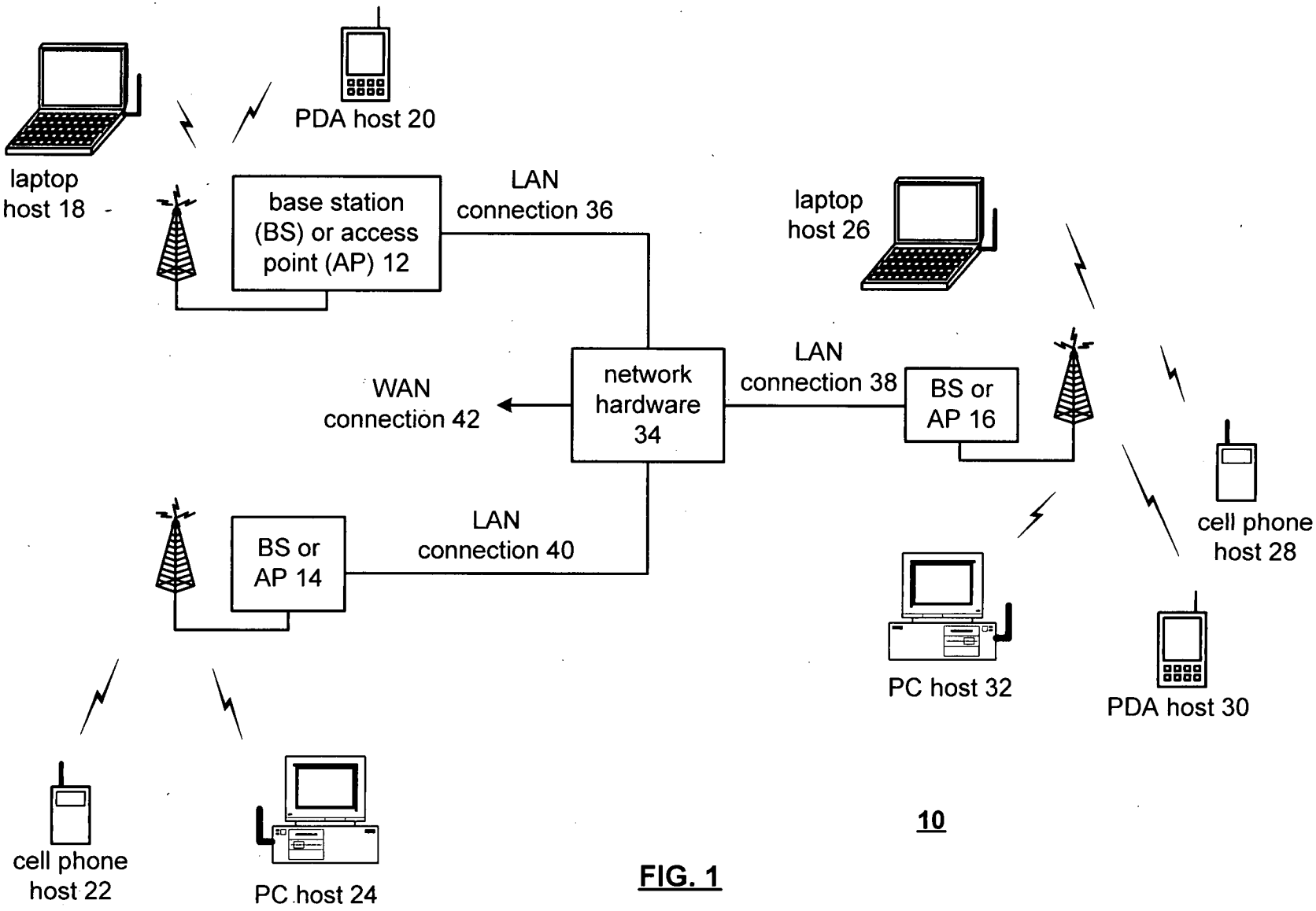
laptop
host 18
PDA host 20
base station
(BS) or access
point (AP) 12
LAN
connection 36
laptop
host 26
WAN
connection 42
network
hardware
34
LAN
connection 38
BS or
AP 16
cell phone
host 28
BS or
AP 14
LAN
connection 40
PC host 32
PDA host 30
cell phone
host 22
PC host 24
10

FIG. 1

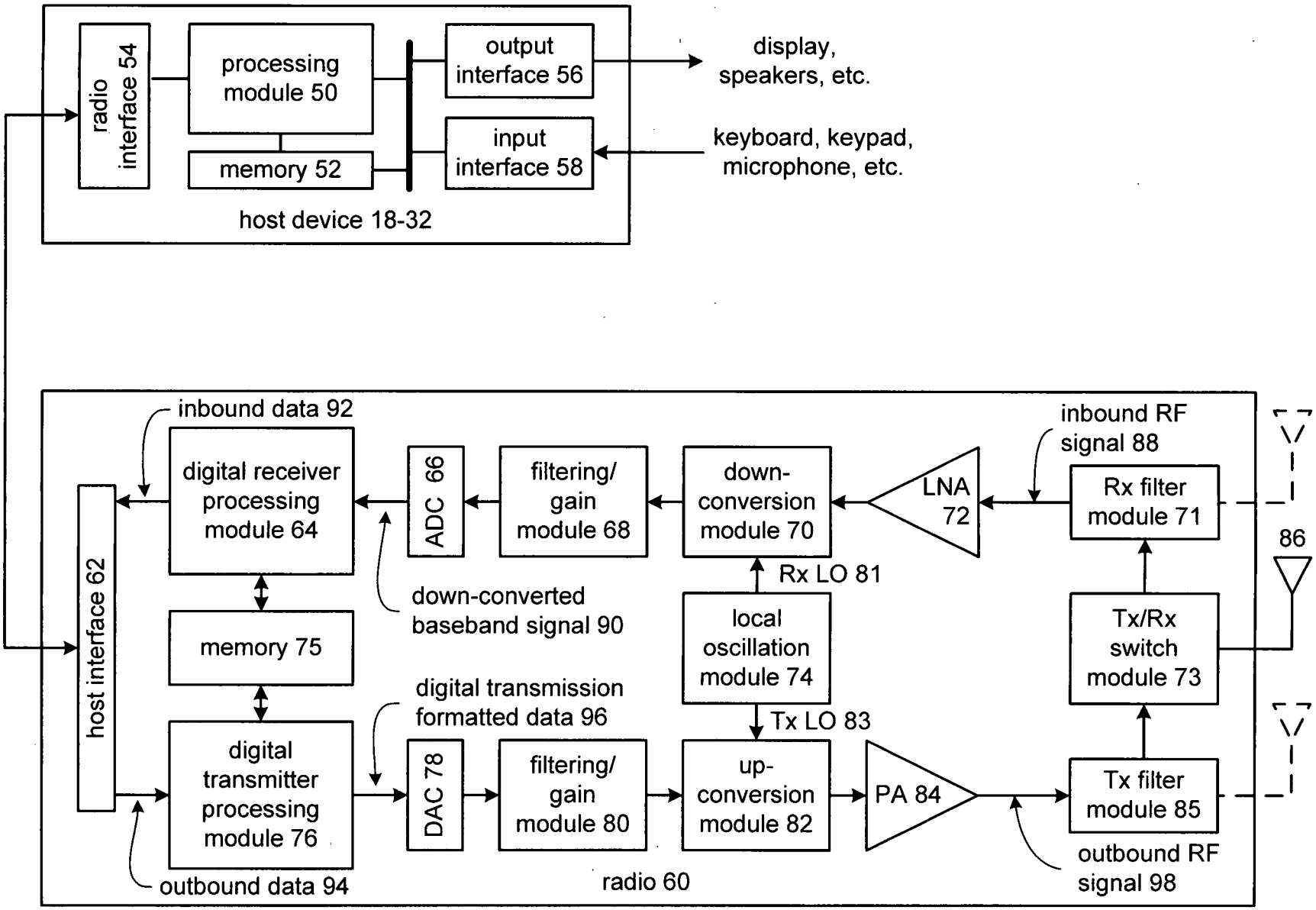
radio interface 54
processing module 50
memory 52
output interface 56
input interface 58
display, speakers, etc.
keyboard, keypad, microphone, etc.
host device 18-32
inbound data 92
digital receiver processing module 64
ADC 66
filtering/ gain module 68
down-conversion module 70
LNA 72
inbound RF signal 88
Rx filter module 71
86
host interface 62
memory 75
down-converted baseband signal 90
Rx LO 81
local oscillation module 74
Tx/Rx switch module 73
digital transmission formatted data 96
Tx LO 83
digital transmitter processing module 76
DAC 78
filtering/ gain module 80
up-conversion module 82
PA 84
Tx filter module 85
outbound RF signal 98
outbound data 94
radio 60

FIG. 2

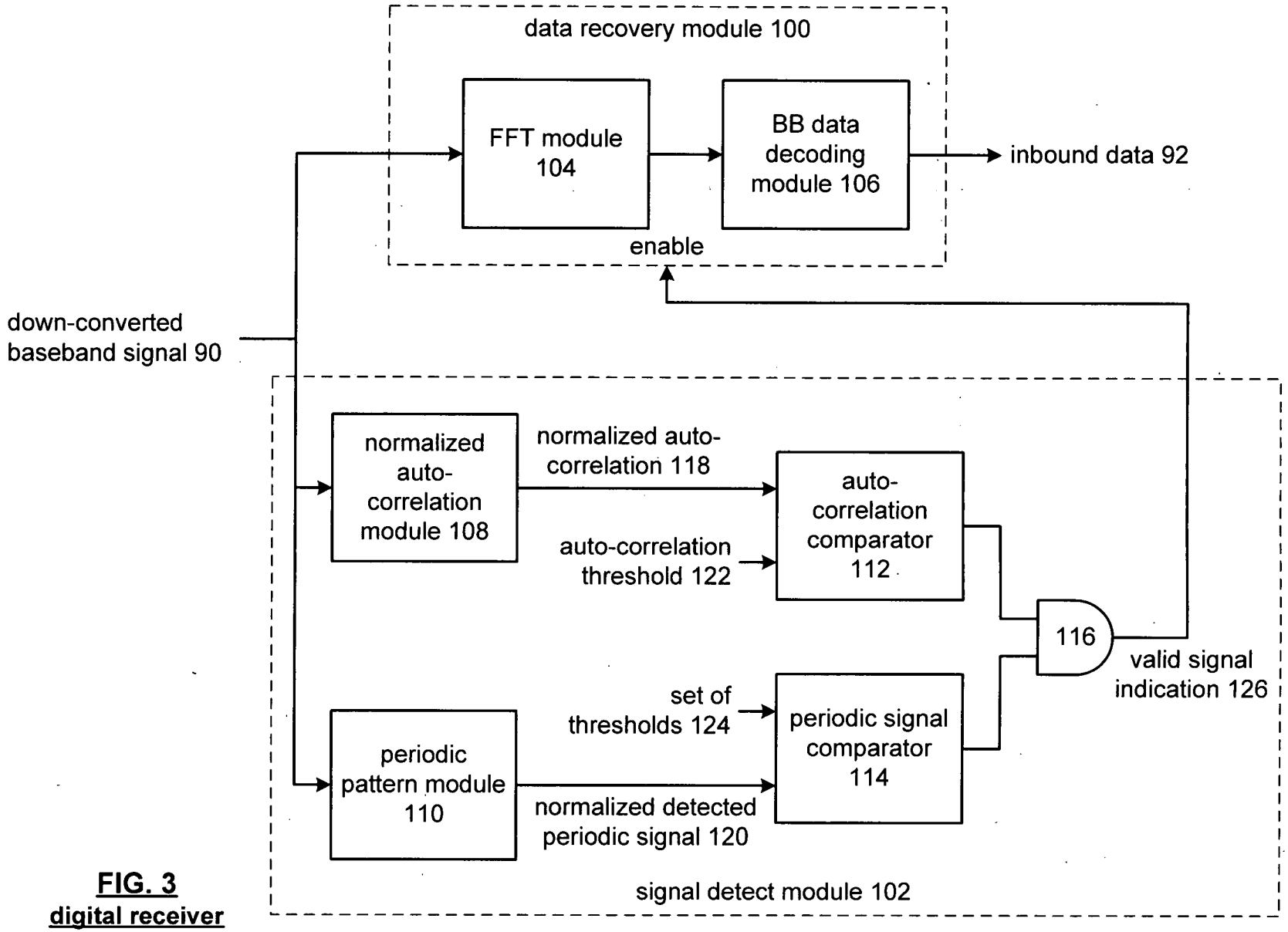

FIG. 3
digital receiver processing module 64

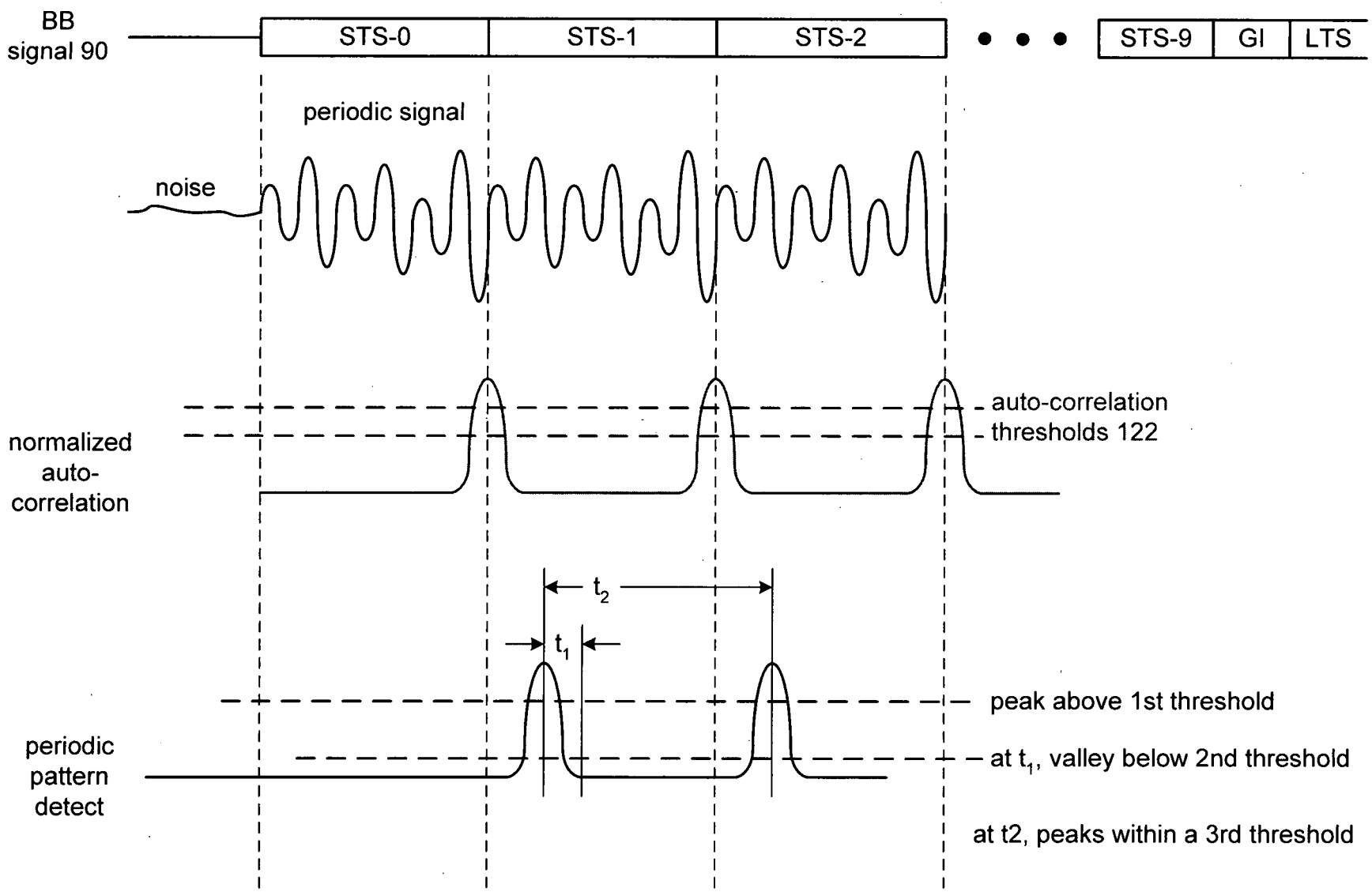

FIG. 4
valid signal detection

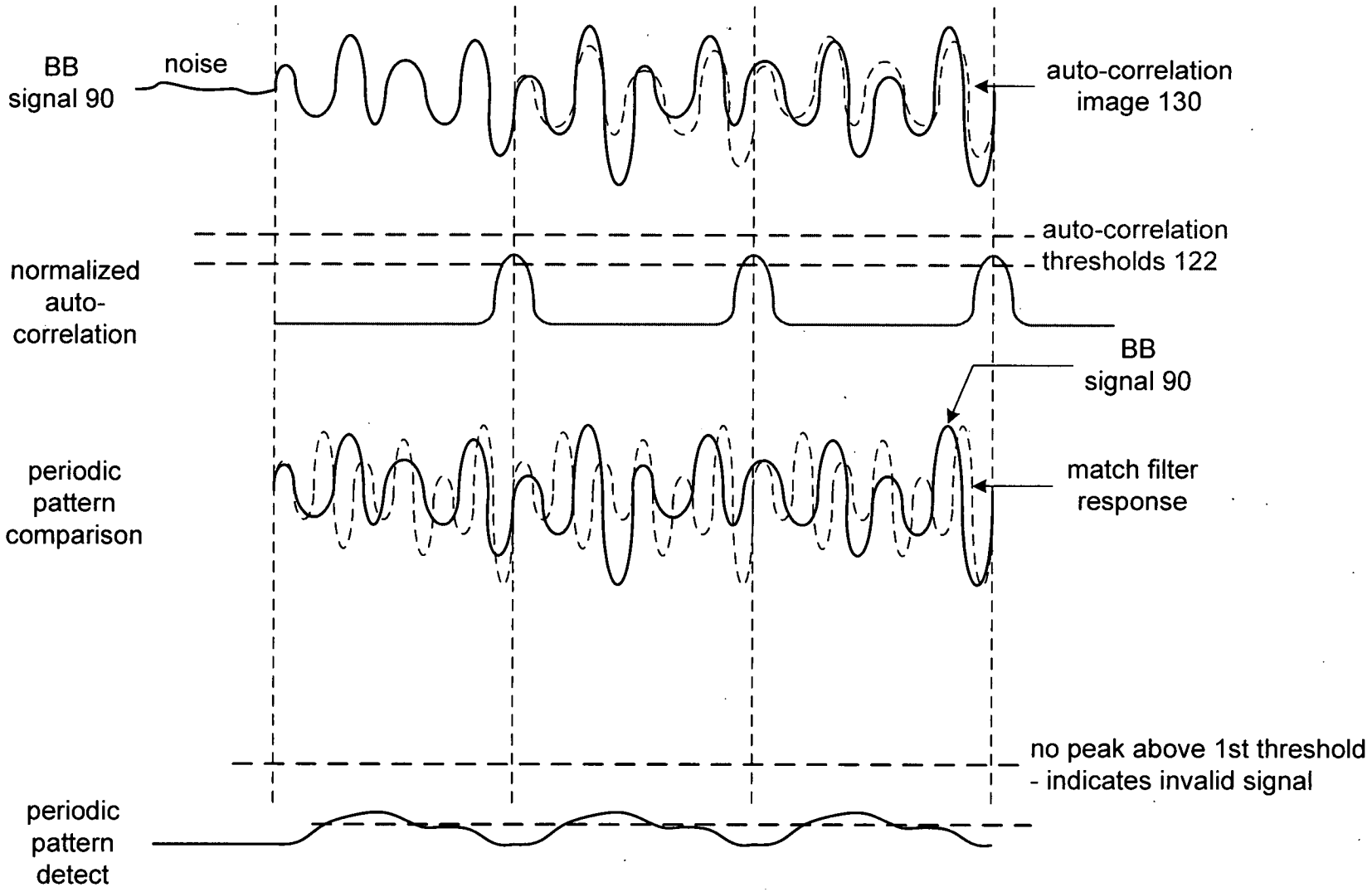

FIG. 5
invalid signal detection

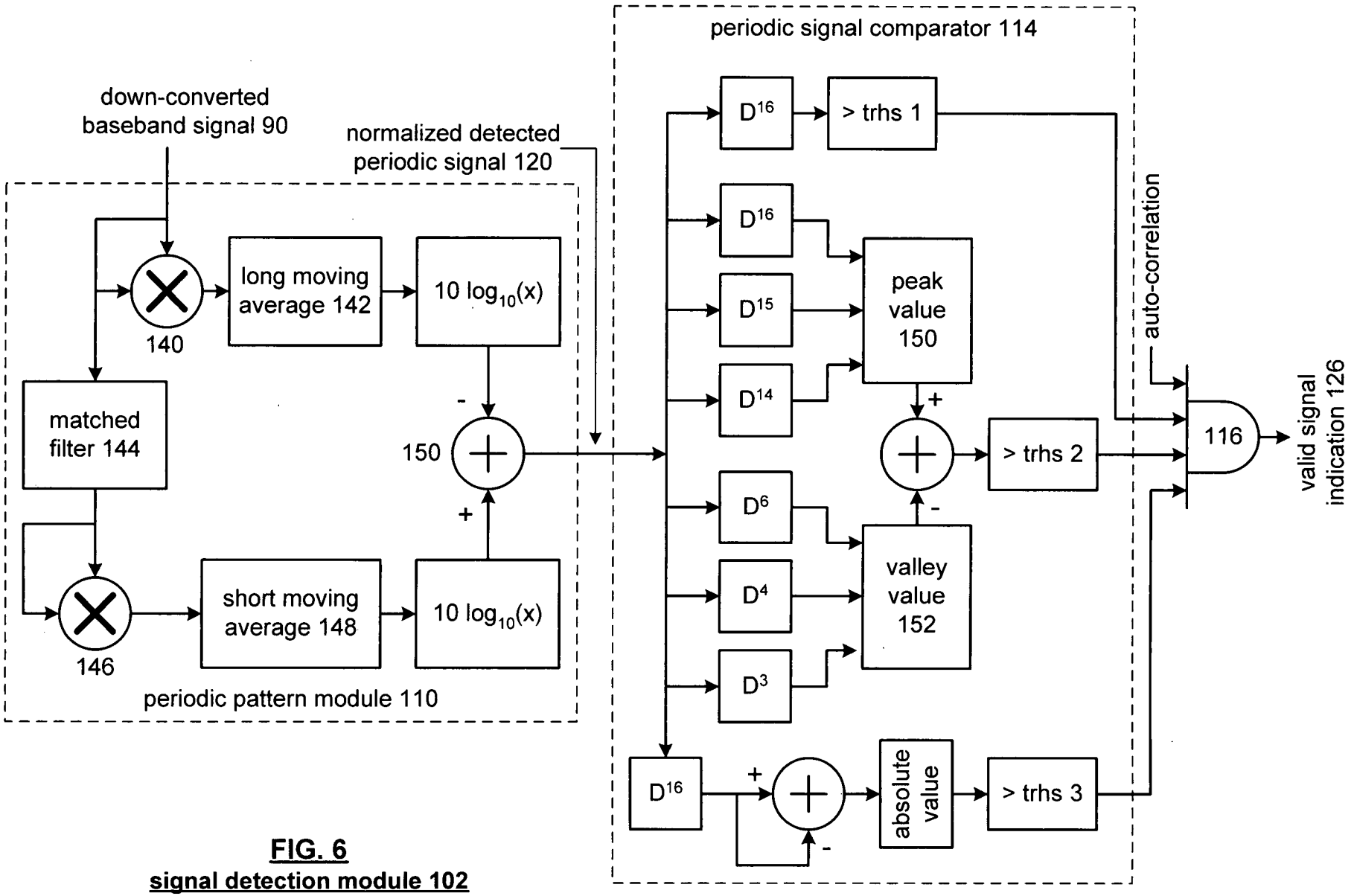

FIG. 6
signal detection module 102

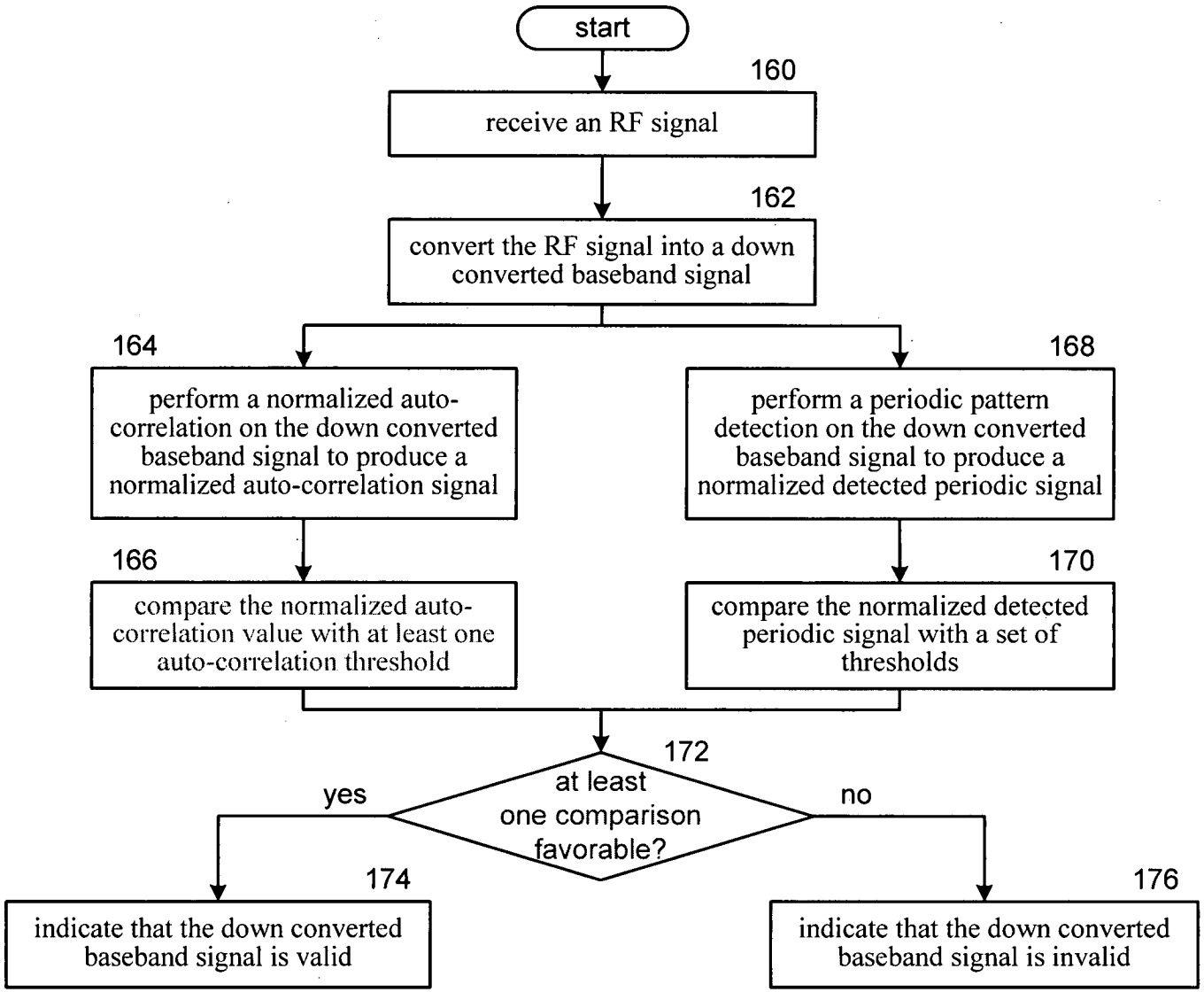
start
160
receive an RF signal
162
convert the RF signal into a down converted baseband signal
164
perform a normalized auto-correlation on the down converted baseband signal to produce a normalized auto-correlation signal
168
perform a periodic pattern detection on the down converted baseband signal to produce a normalized detected periodic signal
166
compare the normalized auto-correlation value with at least one auto-correlation threshold
170
compare the normalized detected periodic signal with a set of thresholds
172
at least one comparison favorable?
yes
no
174
indicate that the down converted baseband signal is valid
176
indicate that the down converted baseband signal is invalid

FIG. 7